Certificate

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of Correction

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No.:   09/710,703
Filed: November 10, 2000
Patent No.:   6,970,560
Issued: November 29, 2005

Applicant(s):   John Josef Hench, Thorkell Gudmundsson, Amir Gholamhossein Zadeh Aghdam, Ioannis Kanellakopoulos, Gurcan Aral, Yaolong Tan, Harbinder Singh, and Sunil C. Shah

Title: METHOD AND APPARATUS FOR IMPAIRMENT DIAGNOSIS IN COMMUNICATION SYSTEMS

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

ATTN: DECISION AND CERTIFICATE OF CORRECTION
BRANCH OF THE PATENT ISSUE DIVISION

REQUEST FOR CERTIFICATE OF CORRECTION OF PATENT FOR PTO MISTAKE (37 CFR §1.322 (a)) AND APPLICANT'S MISTAKE (37 C.F.R. §1.323)

Sir:

Attached in duplicate form, is Form PTO-1050, with at least one copy being suitable for printing. Many of the errors below are (or may be contended to be) the mistake of Applicant who states that the errors are of a minor nature or character and occurred in good faith, and correction thereof does not involve such changes in the patent as would constitute new matter or would require reexamination. Some of the errors which appear in the Form PTO-1050 were

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typographical errors which occurred through the fault of the U.S. Patent and Trademark Office ("PTO").

The exact column and line number where the errors are shown in the patent are as follows:

Page 2, OTHER PUBLICATIONS, line 34 reads "...Guanghan Xu et al., IEEE Transactions in Singal Process-,..." and should read – ...Guanghan Xu et al., IEEE Transactions in Signal Process-,... – .

Page 2, OTHER PUBLICATIONS, line 37 reads "Alexanda Duel-Hallen et al., IEEE Transactions on Com-,..." and should read – Alexandra Duel-Hallen et al., IEEE Transactions on Com-,... – .

Column 1, line 46 reads "...transmitted over wires, cable, fiber optics wireless, or other..." and should read – ...transmitted over wires, cable, fiber optics, wireless, or other...–.

Column 9, lines 32-33 read "...value (computed over the entire spectrum of a communication channel.) For instance, the probabilistic cause-effect ..." and should read – ...value (computed over the entire spectrum of a communication channel). For instance, the probabilistic cause-effect ... –.

Column 11, line 45 reads "...services in the time interval T ≡ t β[T, T+dT], where dT..." and should read – ...services in the time interval T ≡ t ∈[T, T+dT], where dT...–.

Column 11, lines 45-46 reads "...where dT a small length of time on the order of one to a small..." and should read – ...where dT is a small length of time on the order of one to a small... –.

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Column 12, line 67 reads "A(3,3) A(3,3)+1=2" and should read – A(3,3)=A(3,3)+1=2 –.

Column 13, line 51 reads, "A. Forced Training" and should read –Forced Training: –. (no indent)

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Column 18, lines 66-67 read, "...be to provide for four 64-bin groupings (quartiles) for non aggregate data. The drift estimates help give more accurate..." and should read – ...be to provide for four 64-bin groupings (quartiles) for non-aggregate data. The drift estimates help give more accurate... –.

Column 19, line 25 reads, "...or the steady state value of noise before and after and event." and should read – ...or the steady state value of noise before and after an event. –.

Column 20, line 64 reads, "PSD HDSL Disturber = K_{HDSL}..." and should read – PSD HDSL-Disturber = K_{HDSL}... –.

Column 21, line 30 reads,

$$\sin^2\left(\frac{\pi f}{f_0}\right) \times \frac{1}{1+\left(\dfrac{f}{f_{3\,dB-LPF}}\right)^6} \times \frac{f^2}{f^2 + f^2_{3\,dB-HPF}} \times (x_n \times f^{3/2})$$

and should read

$$\sin^2\left(\frac{\pi f}{2f_0}\right) \times \frac{1}{1+\left(\dfrac{f}{f_{3\,dB-LPF}}\right)^6} \times \frac{f^2}{f^2 + f^2_{3\,dB-HPF}} \times (x_n \times f^{3/2})$$

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Column 26, lines 35-37 read, "...identified. This algorithm is appropriate for identifying the sudden changes in SNR that is common when the level of noise from disturbers suddenly change due to an..." and should read – ... identified. This algorithm is appropriate for identifying the sudden changes in SNR that are common when the level of noise from disturbers suddenly changes due to an... –.

Column 27, line 10 (Equation 5) reads,

"$p_{ij} \equiv\ =P\{M(k)=M_j|M(k-1)=M_i\}$" and should read

$- p_{ij} \equiv P\{M(k)=M_j|M(k-1)=M_i\}\ -.$

Column 28, lines 11-12 read,
"$P_{01}(k-1)=\mu_{1|1}(P_1(k-1)+(x_1(k-1)-x_{01}(k-1))^{2)+}\ \mu_{2|1}(P_2(k-1)+(x_2(k-1)-x_{01}(k-1))^2)$"

and should read

$- P_{01}(k-1)=\mu_{1|1}(P_1(k-1)+(x_1(k-1)-x_{01}(k-1))^2)+\ \mu_{2|1}(P_2(k-1)+(x_2(k-1)-x_{01}(k-1))^2)-.$

Column 28, lines 13-14 read,
"$P_{02}(k-1)=\mu_{1|2}(P_1(k-1)+(x_1(k-1)-x_{02}(k-1))^{2)+}\ \mu_{2|2}(P_2(k-1)+(x_2(k-1)-x_{02}(k-1))^2)$"

and should read

$- P_{02}(k-1)=\mu_{1|2}(P_1(k-1)+(x_1(k-1)-x_{02}(k-1))^2)+\mu_{2|2}(P_2(k-1)+(x_2(k-1)-x_{02}(k-1))^2)\ -.$

Column 30, lines 24-25 read, "The likelihood functions associated with these moments assuming a Gaussian distribution is..." and should read – The likelihood functions associated with these moments assuming a Gaussian distribution are... –.

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Column 32, line 18 reads, "III. Event Analysis" and should read – IV. Event Analysis –.

Column 33, line 26 reads, "...coefficients and transfer functions. Note that these are the..." and should read – ...coefficients and transfer functions). Note that these are the... –.

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Column 33, line 40 reads, "...comparison may be be done probabilistically using Bayesian..." and should read – ...comparison may be done probabilistically using Bayesian... –.

Column 33, line 43 reads, "...connectivity matrix, see section I, Training, above) to some..." and should read – ...connectivity matrix, see section I. Training) to some... –.

Column 34, line 1 reads, "...v_{ij}, i=1, m and j=1, ...,n_i,n_i possibly different for each i,..." and should read – ...v_{ij}, i=1, ..., m and j=1, ...,n_i,n_i possibly different for each i,... –.

Column 35, lines 1-2 read, "...as "was the victim affected or not?" All objects reporting a chance are included, as are all objects expected to have..." and should read – ...as "was the victim affected or not?" All objects reporting a change are included, as are all objects expected to have... –.

Column 35, lines 8-9 read, "...in the network the events occur and the possible cause depend on which victims are being considered." and should read – ...in the network the events occur and the possible cause depends on which victims are being considered. –.

Column 38, lines 34-35 read, "...lines have become inconclusive. In this case, more than one likely causes may be the conclusion." and should read – ...lines have become inconclusive. In this case, more than one likely cause may be the conclusion. –.

Column 39, line 40 reads,

"$\Phi_{k+1}^{-1} = \Phi_k^{-1} - \Phi_k^{-1} u_{k+1} (I + u_{k+1}^T \Phi_k^{-1} u_{k+1})^{-1} u_{k+1}^T \Phi_k^{-1}$" and should read

$$- \Phi_{k+1}^{-1} = \Phi_k^{-1} - \Phi_k^{-1} u_{k+1} (I + u_{k+1}^T \Phi_k^{-1} u_{k+1})^{-1} u_{k+1}^T \Phi_k^{-1} -$$

Column 39, lines 42-43 reads,

$$\text{``}\Theta_{k+1}=(I\text{-}\Phi_k^{-1}u_{k+1}(I\text{+}u_{k+1}^T\Phi_k^{-1}u_{k+1})^{-1}u_{k+1}^T)\ \Theta_k\text{+}\Phi_{k\text{-}1}y_{k+1}u_{k+1}T\text{)''}$$

and should read

$$-\ \Theta_{k+1}=(I\text{-}\Phi_k^{-1}u_{k+1}(I\text{+}u_{k+1}^T\Phi_k^{-1}u_{k+1})^{-1}u_{k+1}^T)\ (\Theta_k\text{+}\Phi_k^{-1}y_{k+1}u_{k+1}^T)\ -$$

Column 40, line 14 reads, "...as four out-of-domain coupling coefficients, beta$_{11}$, beta/$_{12}$,..." and should read – ...as four out-of-domain coupling coefficients, beta$_{11}$, beta$_{12}$,... –.

Column 40, line 25 reads, "...input spectra of the DSL Services. The inputs T_1 and T_2, are..." and should read – ...input spectra of the DSL Services. The inputs T_1 and T_2 are... –.

Column 40, line 32 reads, "...is assumed to be the identity matrix, i.e., M_1=1. Similarly, ..." and should read – ...is assumed to be the identity matrix, i.e., M_1=I. Similarly, ... –.

Column 40, line 67 reads, "...variance to the variance derived from from an ensemble of ..." and should read – ...variance to the variance derived from an ensemble of... –.

Column 41, line 48 reads, "... ● ● or ●$^{-1}$ ● ● Since the solution of the identification..." and should read – ... ● ● or ●$^{-1}$ ● ● . Since the solution of the identification... –.

Column 41, line 64 reads, "...of the frequency bins, while the second could be propagate..." and should read – ...of the frequency bins, while the second could be propagating... –.

Column 42, line 65 reads,

$$\text{``}\hat{v}_{jk}\sigma^2_{jk}|u_j|^{2}\text{''}\text{ and should read} - \hat{v}_{jk} = \sigma^2_{jk}|u_j|^2 \ -.$$

Column 43, line 10 reads, "Impairment Estimation for Out-of-Domain Offenders" and should read – 3. Impairment Estimation for Out-of-Domain Offenders –.

Column 43, line 27 reads,

$$\text{``}\hat{v}_{pq,jk}\Sigma^2_{pq,jk}|u_{pq,j}|^{2}\text{''}\text{ and should read} - \hat{v}_{pq,jk}\ \sigma^2_{pq,jk}|u_{pq,j}|^2 -.$$

Column 45, lines 34-35 read, "...instructions which, when executed in a processing system, causes said system to perform a method, the method com-..." and should read – ...instructions which, when executed in a processing system, cause said system to perform a method, the method com-... –.
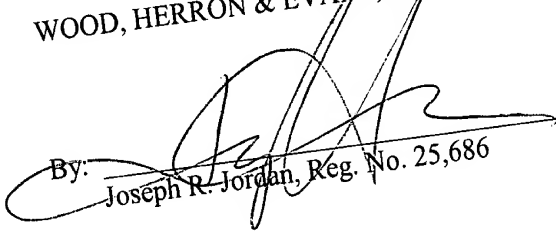
Please send the certificate to:

Joseph R. Jordan, Esq.
Wood, Herron & Evans, L.L.P.
2700 Carew Tower
Cincinnati, Ohio 45202

As some of the errors are, or could be contended to be Applicant's mistakes, enclosed is a check for $100.00 to cover the correction fee. If there is any further charge or credit due, please use Deposit Account No. 23-3000.

Respectfully submitted,

WOOD, HERRON & EVANS, L.L.P.

By: Joseph R. Jordan, Reg. No. 25,686

WOOD, HERRON & EVANS, L.L.P.
2700 Carew Tower
Cincinnati, Ohio 45202
(513) 241-2324

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7

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO.   : 6,970,560

DATED   : November 29, 2005

INVENTOR(S) : John Josef Hench, Thorkell Gudmundsson, Amir Gholamhossein Zadeh Aghdam, Ioannis Kanellakopoulos, Gurcan Aral, Yaolong Tan, Harbinder Singh, and Sunil C. Shah

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- -

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$-\Phi_{k+1}^{-1}=\Phi_k^{-1}-\Phi_k^{-1}u_{k+1}(I+u_{k+1}^T\Phi_k^{-1}u_{k+1})^{-1}u_{k+1}^T\Phi_k^{-1}-$.

Column 39, lines 42-43 reads,

"$\Theta_{k+1}=(I-\Phi_k^{-1}u_{k+1}(I+u_{k+1}{}^T\Phi_k^{-1}u_{k+1})^{-1}u_{k+1}{}^T)\,\Theta_k+\Phi_{k-1}y_{k+1}u_{k+1}T)$"

and should read

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Column 40, line 32 reads, "...is assumed to be the identity matrix, i.e., $M_1=1$. Similarly, ..." and should read – ...is assumed to be the identity matrix, i.e., $M_1=I$. Similarly, ... –.

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CERTIFICATE OF CORRECTION

PATENT NO.   : 6,970,560

DATED   : November 29, 2005

INVENTOR(S) : John Josef Hench, Thorkell Gudmundsson, Amir Gholamhossein Zadeh Aghdam, Ioannis Kanellakopoulos, Gurcan Aral, Yaolong Tan, Harbinder Singh, and Sunil C. Shah

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Column 40, line 67 reads, "...variance to the variance derived from from an ensemble of ..." and should read – ...variance to the variance derived from an ensemble of... –.

Column 41, line 48 reads, "... ● ● or ●$^{-1}$ ● ● Since the solution of the identification..." and should read – ... ● ● or ●$^{-1}$ ● ● . Since the solution of the identification... –.

Column 41, line 64 reads, "...of the frequency bins, while the second could be propagate..." and should read – ...of the frequency bins, while the second could be propagating... –.

Column 42, line 65 reads,

"$\hat{v}_{jk}\sigma^2_{jk}|u_j|^2$" and should read – $\hat{v}_{jk} = \sigma^2_{jk}|u_j|^2$ –.

Column 43, line 10 reads, "Impairment Estimation for Out-of-Domain Offenders" and should read – 3. Impairment Estimation for Out-of-Domain Offenders –.

Column 43, line 27 reads,

"$\hat{v}_{pq,jk}\Sigma^2_{pq,jk}|u_{pq,j}|^2$" and should read – $\hat{v}_{pq,jk} \sigma^2_{pq,jk}|u_{pq,j}|^2$ –.

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Column 45, lines 34-35 read, "…instructions which, when executed in a processing system, causes said system to perform a method, the method com-…" and should read – …instructions which, when executed in a processing system, cause said system to perform a method, the method com-… –.

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Page 2, OTHER PUBLICATIONS, line 34 reads "…Guanghan Xu et al., IEEE Transactions in Singal Process-,…" and should read – …Guanghan Xu et al., IEEE Transactions in Signal Process-,… – .

Page 2, OTHER PUBLICATIONS, line 37 reads "Alexanda Duel-Hallen et al., IEEE Transactions on Com-,…" and should read – Alexandra Duel-Hallen et al., IEEE Transactions on Com-,… – .

Column 1, line 46 reads "…transmitted over wires, cable, fiber optics wireless, or other…" and should read – …transmitted over wires, cable, fiber optics, wireless, or other…–.

Column 9, lines 32-33 read "…value (computed over the entire spectrum of a communication channel.) For instance, the probabilistic cause-effect …" and should read – …value (computed over the entire spectrum of a communication channel). For instance, the probabilistic cause-effect … –.

Column 11, line 45 reads "…services in the time interval $T \equiv t \ \beta[T, T+dT]$, where dT…" and should read – …services in the time interval $T \equiv t \in [T, T+dT]$, where dT…–.

Column 11, lines 45-46 reads "…where dT a small length of time on the order of one to a small…" and should read – …where dT is a small length of time on the order of one to a small… –.

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 11, lines 51-52 read "...measured levels of noise the time interval T $\equiv$ t β[T, T+dT]. The list M is a vector whose entries correspond..." and should read – ...measured levels of noise the time interval $T \equiv t \in [T, T+dT]$. The list M is a vector whose entries correspond... –.

Column 12, line 67 reads "A(3,3) A(3,3)+1=2" and should read – A(3,3)=A(3,3)+1=2 –.

Column 13, line 51 reads, "A. Forced Training" and should read –Forced Training: –. (no indent)

Column 16, line 67 reads, "...external singular vectors of ● ● or ● ●⁻ ● ● ● Since a ..." and should read – ...external singular vectors of ● ● or ● ●⁻ ● ● ● . Since a ...–.

Column 18, line 36 reads, "The signal transform block 408 coverts raw, digitized..." and should read – The signal transform block 408 converts raw, digitized... –.

Column 18, lines 66-67 read, "...be to provide for four 64-bin groupings (quartiles) for non aggregate data. The drift estimates help give more accurate..." and should read – ...be to provide for four 64-bin groupings (quartiles) for non-aggregate data. The drift estimates help give more accurate... –.

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 19, line 25 reads, "...or the steady state value of noise before and after and event." and should read – ...or the steady state value of noise before and after an event. –.

Column 20, line 64 reads, "PSD $_{\text{HDSL Disturber}}$ = K$_{\text{HDSL}}$..." and should read – PSD $_{\text{HDSL-Disturber}}$ = K$_{\text{HDSL}}$... –.

Column 21, line 30 reads,

$$\sin^2\left(\frac{\pi f}{f_0}\right) \times \frac{1}{1 + \left(\dfrac{f}{f_{3\ dB-LPF}}\right)^6} \times \frac{f^2}{f^2 + f_{3\ dB-HPF}^2} \times (x_n \times f^{3/2})$$

and should read

$$\sin^2\left(\frac{\pi f}{2f_0}\right) \times \frac{1}{1 + \left(\dfrac{f}{f_{3\ dB-LPF}}\right)^6} \times \frac{f^2}{f^2 + f_{3\ dB-HPF}^2} \times (x_n \times f^{3/2})$$

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 21, line 53 reads, "PSD $_{ADSL\ Disturber}$ = K$_{ADSL}$..." and should read – PSD $_{ADSL\text{-}Disturber}$ = K$_{ADSL}$... –.

Column 22, line 24 reads, "It should also be noted that case certain frequency bins are..." and should read – It should also be noted that in case certain frequency bins are... –.

Column 22, line 35 reads, "The frequency of zeros just increase the level of confidence..." and should read – The frequency of zeros just increases the level of confidence... –.

Column 23, line 37 reads, "Furthermore, if the columns of A are suitable normalized,..." and should read – Furthermore, if the columns of A are suitably normalized,... –.

Column 26, lines 35-37 read, "...identified. This algorithm is appropriate for identifying the sudden changes in SNR that is common when the level of noise from disturbers suddenly change due to an..." and should read – ... identified. This algorithm is appropriate for identifying the sudden changes in SNR that are common when the level of noise from disturbers suddenly changes due to an... –.

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 27, line 10 (Equation 5) reads,

"$p_{ij} \equiv = P\{M(k)=M_j|M(k-1)=M_i\}$" and should read

$- p_{ij} \equiv P\{M(k)=M_j|M(k-1)=M_i\} -$.

Column 28, lines 11-12 read,

"$P_{01}(k-1)=\mu_{1|1}(P_1(k-1)+(x_1(k-1)-x_{01}(k-1))^{2)+}\mu_{2|1}(P_2(k-1)+(x_2(k-1)-x_{01}(k-1))^2)$"
and should read

$- P_{01}(k-1)=\mu_{1|1}(P_1(k-1)+(x_1(k-1)-x_{01}(k-1))^2)+ \mu_{2|1}(P_2(k-1)+(x_2(k-1)-x_{01}(k-1))^2)-$.

Column 28, lines 13-14 read,

"$P_{02}(k-1)=\mu_{1|2}(P_1(k-1)+(x_1(k-1)-x_{02}(k-1))^{2)+}\mu_{2|2}(P_2(k-1)+(x_2(k-1)-x_{02}(k-1))^2)$"
and should read

$- P_{02}(k-1)=\mu_{1|2}(P_1(k-1)+(x_1(k-1)-x_{02}(k-1))^2)+\mu_{2|2}(P_2(k-1)+(x_2(k-1)-x_{02}(k-1))^2) -$.

Column 30, lines 24-25 read, "The likelihood functions associated with these moments assuming a Gaussian distribution is..." and should read – The likelihood functions associated with these moments assuming a Gaussian distribution are... –.

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 31, line 26 reads, "II. Event Clustering" and should read – III. Event Clustering –.

Column 31, line 45 reads, "...collection sample time tk. At this time, a window is either..." and should read – ... collection sample time t_k. At this time, a window is either... –.

Column 32, line 18 reads, "III. Event Analysis" and should read – IV. Event Analysis –.

Column 33, line 26 reads, "...coefficients and transfer functions. Note that these are the..." and should read – ...coefficients and transfer functions). Note that these are the... –.

Column 33, line 28 reads, "...defined above in section I. Training, above." and should read – ...defined above in section I. Training. –.

Column 33, line 35 reads, "...(based upon statistics of observed SNR changes vs. offender..." and should read – ...based upon statistics of observed SNR changes vs. offender... –.

Column 33, line 40 reads, "...comparison may be be done probabilistically using Bayesian..." and should read – ...comparison may be done probabilistically using Bayesian... –.

- -

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 33, line 43 reads, "…connectivity matrix, see section I, Training, above) to some…" and should read – …connectivity matrix, see section I. Training) to some… –.

Column 34, line 1 reads, "…v_{ij}, i=1, m and j=1, …,n_i,n_i possibly different for each i,…" and should read – …v_{ij}, i=1, …, m and j=1, …,n_i,n_i possibly different for each i,… –.

Column 35, lines 1-2 read, "…as "was the victim affected or not?" All objects reporting a chance are included, as are all objects expected to have…" and should read – …as "was the victim affected or not?" All objects reporting a change are included, as are all objects expected to have… –.

Column 35, lines 8-9 read, "…in the network the events occur and the possible cause depend on which victims are being considered." and should read – …in the network the events occur and the possible cause depends on which victims are being considered. –.

Column 38, lines 34-35 read, "…lines have become inconclusive. In this case, more than one likely causes may be the conclusion." and should read – …lines have become inconclusive. In this case, more than one likely cause may be the conclusion. –.

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 39, line 40 reads,

"$\Phi_{k+1}^{-1}=\Phi_k^{-1}-\Phi_k^{-1}u_{k+1}(I+u_{k+1}{}^T\Phi_k^{-1}u_{k+1})^{-1}u_{k+1}{}^T\Phi_k{}^{-1}$" and should read

$-\Phi_{k+1}^{-1}=\Phi_k^{-1}-\Phi_k^{-1}u_{k+1}(I+u_{k+1}^T\Phi_k^{-1}u_{k+1})^{-1}u_{k+1}^T\Phi_k^{-1}-.$

Column 39, lines 42-43 reads,

"$\Theta_{k+1}=(I-\Phi_k^{-1}u_{k+1}(I+u_{k+1}{}^T\Phi_k^{-1}u_{k+1})^{-1}u_{k+1}{}^T)\,\Theta_k+\Phi_{k-1}y_{k+1}u_{k+1}T)$"

and should read

$-\Theta_{k+1}=(I-\Phi_k^{-1}u_{k+1}(I+u_{k+1}^T\Phi_k^{-1}u_{k+1})^{-1}u_{k+1}^T)\,(\Theta_k+\Phi_k^{-1}y_{k+1}u_{k+1}^T)-$

Column 40, line 14 reads, "...as four out-of-domain coupling coefficients, $beta_{11}$, $beta/_{12}$,..." and should read – ...as four out-of-domain coupling coefficients, $beta_{11}$, $beta_{12}$,... –.

Column 40, line 25 reads, "...input spectra of the DSL Services. The inputs T_1 and T_2, are..." and should read – ...input spectra of the DSL Services. The inputs T_1 and T_2 are... –.

Column 40, line 32 reads, "...is assumed to be the identity matrix, i.e., $M_1=1$. Similarly, ..." and should read – ...is assumed to be the identity matrix, i.e., $M_1=I$. Similarly, ... –.

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